

**New Record of a Web-spinner, *Oligotoma saundersii*
(Embiidina, Oligotomidae) in Korea**

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ABSTRACT

Oligotoma saundersii (Westwood, 1837) was recognized on the bark of *Pachira aquatica* Aubl. (Bombacaceae), an ornamental tree growing in greenhouse, Seoul, Korea. The morphological characteristics and biology of *O. saundersii* are presented. This is the first record of the order Embiidina in Korea.

Key words: Embiidina, Oligotomidae, *Oligotoma saundersii*, Korea

INTRODUCTION

The Embiidina (or Embioptera; embiids, web-spinners, foot-spinners) is one of the smallest, lesser known order of insect with about 200 species (three species from Japan, 11 species from North America, and 65 species from Australia), and 2,000 species estimated from all over the world. They have been recorded mostly from tropic or subtropic regions (Ross, 1970; Ross, 1991; Borror *et al.*, 1989; Morimoto, 1989). Most species are small to medium sized, narrow-bodied insects, and easily recognized by the large, bulbous basal tarsomere of each foreleg. They live in the silk tunnel established by a hollow hairlike structure on the ventral surface of the basal and second tarsal segments, feeding on entirely vegetable, consisting of outer bark, dead leaves, and living moss. In general, the distribution of Embiidina is restricted to the tropics and subtropics, but the extensions into the warm temperate zone occur accidentally by the artificial introduction through

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commerce. In northern hemisphere it reached 45° latitude of the Old World, but in New World it is known to occur only up to about 40° in Northern California. In the Southern Hemisphere, extensions to about 43° south latitude are recorded from Tasmania (Ross, 1940). Presently, no species of the Order Embiidina has been reported from Korea.

In April 2001, *Oligotoma saundersii* (Westwood, 1837), the most common cosmopolitan species, was found on the bark of *Pachira aquatica* Aubl. (Bombacaceae), an ornamental tree growing in a greenhouse, Segok-dong, Gangnam-gu, Seoul. The morphological characteristics are described with the microscopic photos, and the biology of *O. saundersii* is discussed.

Materials used in this paper are deposited in the National Institute of Agricultural Science and Technology (NIAST), Suwon, Korea.

SYSTEMATIC ACCOUNTS

Order Embiidina (Embioptera) 흰개미붙이목

Family Oligotomidae 흰개미붙이과

Genus *Oligotoma* Westwood, 1837 흰개미붙이속

Embia (*Oligotoma*) Westwood, 1837.

Oligotoma: Burmeister, 1839.

Genotype: *Oligotoma saundersii* (Westwood)

***Oligotoma saundersii* (Westwood, 1837) 흰개미붙이 (Fig. 1)**

Embia (*Oligotoma*) *saundersii* Westwood, 1837, p. 373.

Oligotoma saundersii: Burmeister, 1839, p. 770.

Embia latreillii Rambur, 1842, p. 312.

Olyntha cubana Hagen, 1866, p. 221.

Oligotoma insularis M'Lachlan, 1883, p. 227.

Embia bramini de Saussure, 1896, p. 352.

Embia hova de Saussure, 1896, p. 354.

Oligotoma rochai Navas, 1917, p. 281.

Oligotoma inaequalis Bank, 1924, p. 421.

Material examined. 35 female (apterae), 5 male (alate), Segok-dong, Kangnam-gu, Seoul, 11 April 2001, on *Pachira aquatica* Aubl. (Bombacaceae) in a greenhouse. Numerous larvae and adults observed in the same greenhouse.

Diagnosis. *Male* (alate): Body 9 mm long, light brown in life. Head and terminalia darker. Forewing 5.75 mm long. Process of left hemitergite broad, thin, slightly constricted basally but swollen subapically, narrowly acuminate; process of right hemitergite long, gradually, evenly acuminate distad, extreme apex hooked to right, subtended by a smaller sharp projection. Ninth sternite broad, transverse basally; asymmetrically produced towards left cercus as a broad process with a left apical angle like a narrow sickle spine. Basal segment of left cercus cylindrical, not nodulose on inner side (Fig. 1D). *Female* (apterous): Body 12.00 mm long, dark brown or black in life (Fig. 1A). Eighth sternite divided into a medial and two lateral pigmented areas. Ninth sternite

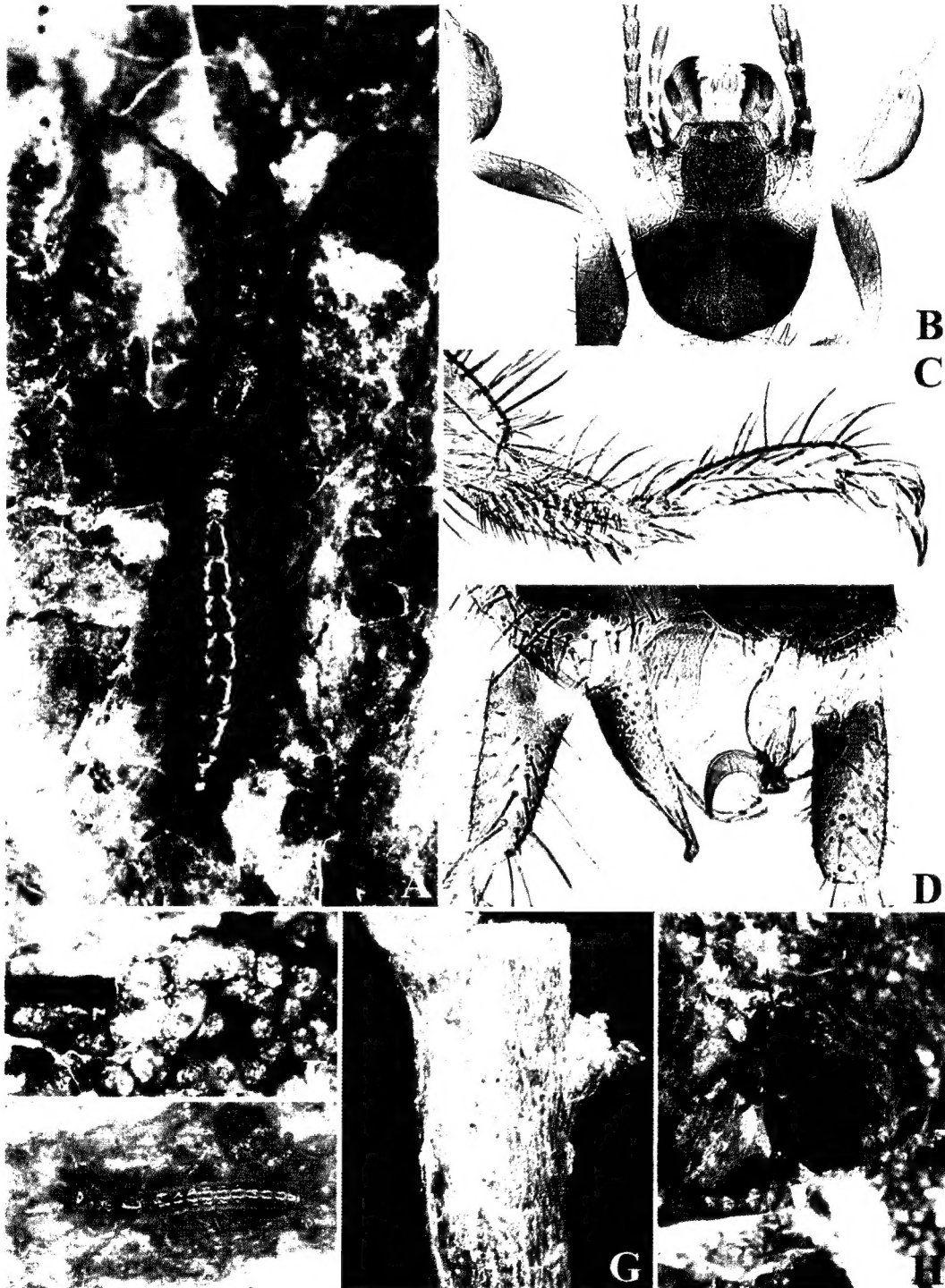


Fig. 1. *Oligotoma saundersii* (Westwood, 1837). A, adult female; B, head and forelegs; C, hind tarsus; D, male terminalia; E, eggs; F, larvae; G, silk tunnel; H, adult female in tunnel.

incised medially by a V-shaped pale area.

Biology. Entire life is in the silk gallery (Fig. 1G) produced by fore tarsus under stone, cracks in soil or rock, dead leaf litters or on the bark of tree (Fig. 1H). It feed on entirely vegetable, consisting of outer bark, dead leaves, living moss, and lichens. Adult male lives short whereas female lives longer than six months, living subsocial as a colony of one female progeny in the gallery spun by parents. The eggs are relatively large, elongate (Fig. 1E). They are laid in cluster attached to the tunnel wall in some protected part of colony and protected by female from enemies. The immature instars are paler than adult. Adult and young instars run very quickly in the gallery, not only forward but also backward. Adult males can be also found in the gallery, but very difficult to find or catch because they escape away very quickly from the gallery when they are revealed. Because the female adult live more than 6 month and reproduce continuously throughout the year, all stages can be seen at once in a colony.

Remarks. This species can be distinguished from the closely related species, *O. nigra* Hagen and *O. humbertiana* (de Saussure) by the broad cultriform process of the left hemitergite and the long, slender, sickle-shaped spine extending horizontal beneath the broad apical tip of the process of ninth sternite (Fig. 1D). In general, because living plant tissue is seldom eaten, embiids have little or no economic importance. However, there is occasional public concern when galleries are conspicuous on the trunks of shade trees and around foundations (Ross, 1987). Contamination of numerous galleries on the trunk of a ornamental tree, which is grown in greenhouse, was observed in a farmer's greenhouse, Seoul (Fig. 1G). Considering that most of *Pachira aquatica* Aubl. is imported from South Eastern Asia including Taiwan, it seems that some colonies of *Oligotoma saundersii* were introduced into Korea, attached on the trunk of *Pachira aquatica* Aubl. and could survive and increase their population in the greenhouse. There is not much possibility of *Oligotoma saundersii* surviving outdoor in winter in the main peninsula of Korea.

Distribution. Most abundant and wide-spread species of the order Embiidina. Artificially tropicopolitan, introduced through commerce.

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한국미기록 흰개미붙이 (흰개미붙이목, 흰개미붙이과)의 보고

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요 약

흰개미붙이목 (Embiidina or Embioptera)의 1종, *Oligotoma saundersii* (Westwood, 1837)가 서울시 강남구 세곡동의 온실에서 재배되고 있는 관엽식물 파키라, *Pachira aquatica* Aubl. (Bombacaceae)의 나무껍질에서 다수 채집되었다. 흰개미붙이목은 국내에서 처음으로 기록되는 목으로 본 종의 형태적 특징 및 생활사에 대해 소개하였다.